

Title (en)
SEMICONDUCTOR DEVICE

Title (de)
HALBLEITERBAUELEMENT

Title (fr)
DISPOSITIF À SEMICONDUCTEURS

Publication
EP 3996137 A1 20220511 (EN)

Application
EP 21201437 A 20211007

Priority
JP 2020186277 A 20201109

Abstract (en)
A semiconductor device includes an electrostatic protection circuit 1 and a MOSFET 2 including a gate terminal. The electrostatic protection circuit 1 includes a positive-side power supply terminal 3, a negative-side power supply terminal 5, a first protection diode 4, a second protection diode 6, a resistance element 7, and a bipolar transistor 8. The second protection diode 6 includes an anode terminal electrically connected to the negative-side power supply terminal 5 via the resistance element 7, and a cathode terminal electrically connected to the gate terminal. The bipolar transistor 8 includes a base terminal, an emitter terminal, and a collector terminal. The bipolar transistor 8 is electrically connected to the anode terminal of the second protection diode 6, the gate terminal, and the positive-side power supply terminal 3. The electrostatic protection circuit 1 is formed on a semiconductor substrate made of silicon carbide.

IPC 8 full level
H01L 27/02 (2006.01); **H02H 9/04** (2006.01)

CPC (source: EP US)
H01L 27/0255 (2013.01 - EP US); **H01L 27/0259** (2013.01 - EP); **H01L 29/1608** (2013.01 - US)

Citation (applicant)
M. MASUNAGAS. SATOR. KUWANAN. SUGIYA. SHIMA: "4H-SiC CMOS Transimpedance Amplifier of Gamma-Irradiation Resistance Over 1 MG", IEEE TRANSACTIONS ON ELECTRON DEVICES, vol. 67, no. 1, January 2020 (2020-01-01), pages 224 - 229, XP011763425, DOI: 10.1109/TED.2019.2953935

Citation (search report)
• [A] JP H02214151 A 19900827 - OLYMPUS OPTICAL CO
• [A] US 2017323882 A1 20171109 - LANGGUTH GERNOT [DE], et al

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
EP 3996137 A1 20220511; JP 2022076065 A 20220519; JP 7422644 B2 20240126; US 11837599 B2 20231205; US 2022149035 A1 20220512

DOCDB simple family (application)
EP 21201437 A 20211007; JP 2020186277 A 20201109; US 202117497639 A 20211008